SOUTHEAST ARIZONA FIRE WEATHER ANNUAL REPORT 2009

1. Summary

2009 started off deceptively wet, with a weather system bringing valley rain and mountain snow January 4th and 5th, resulting in 4" to 8" of snow on local mountains and 0.25" to 0.50" of rain in the valleys. Only one other series of storms this winter would create precipitation over Southeast Arizona, running from February 8th to the 10th. While starting as a mountain snow/valley rain event, snow levels would eventually reach valley floors, resulting in lower elevation snowfall amounts ranging from 0.50" to 3.0" while mountains saw 4" to 7". Otherwise, most of the systems moving through proved to be dry. Also of note is a significant warm up during the latter half of February that would result in Tucson reaching 91 degrees on Feb 23rd. These warm and dry conditions would not relent until March 8th, when a system would bring 0.10" to 0.33" of rain and 1" to 3" of snow to mountain peaks. This was a brief intermission as dry conditions remained in place well into April. While there were 4 systems to move through the area during the first half of April, only one on the 11th produced any precipitation, with amounts varying between 0.10" to 0.40" mostly, though some locations saw as much as 0.50" to 0.90". Warm and dry conditions would again resume and continue into late May. An unseasonably strong spring storm on the 21st and 22nd of May would bring significant rainfall amounts, breaking Tucson's daily rainfall record of 0.21" set in 1920 with 0.53" recorded at the airport. Rainfall in other locations ranged from 0.10" to 0.70". The other major impact of this storm was that it brought afternoon high temperatures in late May down to the upper 60s and lower 70s, significantly below seasonal normals.

Low pressure over southern California would continue to keep afternoon temperatures below normal for most of June, triggering a cool start to the 2009 Monsoon season as monsoonal flow began to increase over the latter half of the month, triggering associated showers and thunderstorms. This cool and wet monsoon activity would continue into the first half of July, but then the upper High moved out of the favorable position, resulting in most of the monsoonal moisture being south of the area. This allowed for temperatures to warm to climatological normals while precipitation all but disappeared. And although 3 more events would occur during August, the 4th to 5th, the 12th to 13th and the 21st and 22nd, the majority of August would be hot and dry. Total rainfall for these 3 events was up to 1.25" with isolated areas seeing as much as 2.4", but this would fall well short of relieving drought conditions over the area. Hurricane Jimena would bring some much needed rain the first week of September, 0.25" to 2.0" with isolated locations reporting as much as 3.0", the remainder of the month would prove dry, closing out an anemic 2009 Monsoon.

Not surprisingly, the remaining months of 2009 proved to be comprised of mainly dry conditions with temperatures above normal. Most systems moving through the area typically brought winds, but no precipitation. However, tropical storm Olaf was able to push some moisture into Southeast Arizona in early October, bringing a trace to 0.20" of rainfall, and up to 0.50" in some locations. A strong storm system at the end of November brought up to 6.0" of snow to the mountains, but produced little in terms of rainfall down in the valleys. December would be bookended with storms, the first producing 0.10" to 0.50" of rain on the valley floors, 1' to 2' of snow in the mountains

and the second producing similar amounts of rain but only 5" of snow in the mountains. The middle of the month, like the bulk of the year, saw dry conditions with temperatures above normal.

Only one fire/complex had either Type I or Type II Incident Command Teams attached: the Canelo complex, consisting of the Canelo, A Bar, Bear, Miller and Washington fires. These fires burned a total of 4,292 acres. WFO Tucson had 0 IMET dispatch days.

Thirty-eight fire weather watches were issued this year, twenty-seven of which were upgraded to Red Flag Warnings. Twenty of these would verify. Spot forecasts for wildfires increased from 83 for 2008 to 92 in 2009. Prescribed burns increased this year as well from 86 in 2008 to 108 this year.

2. Fire Weather Watch/Red Flag Warning Verification

For an event to occur, the fire danger rating, minimum relative humidity, and wind speed values (sustained and/or gusts) must have met the following criteria listed below (for 3 or more hours) and published in the 2009 Southwest Area Operations Plan.

Fire Danger Rating:	High or greater
Minimum Relative Humidity:	15 percent or less
Sustained Wind Speed (ASOS):	25 mph or greater
Sustained Wind Speed (RAWS):	20 mph or greater
Wind Speed Gusts:	35 mph or greater

In the continuing effort to provide more accurate verification, criteria with regards to how many stations were needed for a watch/warning to verify reverted back to the old standards: 3 stations for 148 (unless only a portion of the zone fell under the watch/warning), 2 stations for 146 and 1 station for 147. However, given the recognized problems and new siting of the Horse Camp RAWS, data from that station was only used if it verified an existing Red Flag warning, not in determining missed events while other 2 stations in that Zone, Sasabe and Sells, were used for both purposes, verification and determining missed events.

Also of note, while FAR is high and CSI is low for Fire Weather Zone 146, a problem with the wind data from the RAWS station at Trail Cabin during the month of March eliminated the site from use in verification. In the instance of 2 warnings, this station could have made the difference between a 'hit' or a 'miss', which would have greatly altered these statistics.

Red Flag Zone Verification Statistics:

Zone	POD	FAR	CSI	Avg. Lead Time	Issued
146	1.0	0.82	0.18	8.67 Hours	11
147	1.0	0.18	0.82	10.61 Hours	11
148	1.0	0.58	0.42	18.06 Hours	19
District	1.0	0.54	0.46	13.30 Hours	40

Fire Weather Watch Zone Verification Statistics:

Zone	Issued	Upgraded to RFW	Verified	Avg. Lead Time
146	6	6	2	28.25 Hours
147	5	4	4	36.25 Hours
148	14	14	7	35.36 Hours
District	25	24	13	34.54 Hours

3. Spot Forecasts

Zone	Wildfires	Prescribed	Other	Total
146	20	46	0	66
147	14	10	0	24
148	58	52	4	110
District	92	108	4	204

4. IMET Dispatches

IMET: Steven M. Reedy
Days out of the office: 0
Number of Fires: 0

5. Fire Weather Teaching Assignments

Course	Location	Dates	Instructor
S290	Vail, AZ	3/26 to 3/27	Steven M. Reedy
S290	Tucson, AZ	12/1 to 12/2	Steven M. Reedy